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(54) Title: STABILIZED BONE GRAFT

(57) Abstract: A demineralized bone matrix (DBM) or other matrix composition is provided that has been stabilized by lowering the pH of the composition, reducing the water content, adding water substitutes, and/or increasing the amount of deuterated water present in the composition in order to reduce the activity of endogenous degrading enzymes such as proteases. A hydrated form of a stabilized DBM composition may be stable up to a year at room temperature at acidic pH. The acidified DBM compositions may be further stabilized by the addition of a stabilizing agent such as deuterated water, water substitutes, polymers, protease inhibitors, glycerol, hydrogels, etc. The invention also provides methods of preparing, testing, and using the inventive stabilized osteoinductive matrix compositions.

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